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Designing and defining the knowledge sharing management system between governmental organizations

Ahmad Ali Yazdanpanah[1], Rasool Motazedian[2] , Mohammad GhassemMirzaei[2]

[1] High Education and Program Institute, Faculty of Statistic Researches and Information Technology, Iran; [2] Allameh Tabatabai University, Iran

Abstract

The knowledge management has become important after information explosion and human's entrance into science era. Therefore, science became the most important source for organizations and countries. Science management is the process of creating value from invisible assets (Human force) of the organization. The private sector has taken the first steps to put into operation 'Science Management ''but the government follows the private sector with the distance of one step. However, the studies concerning sharing science out are rare as the most important part of science management process in governmental sector. This article discusses the designing of the system to share science out in governmental organizations as an essential pattern of the systems (Entrance, process, and exit). Having examined the sources concerning science management and sharing it out, our final model of the study has considered the elements important in science management frame as input in governmental sector (People, organization, technology) influencing sharing science out , the science management activities as process and finally organizational operation improvement and favorable services as the output.

Keywords: Science management, sharing science out, systematic attitude, governmental sector

Introduction

By virtue of their management method it may consider the communities and their evolution process as the evolution from chase era to information and finally wisdom and sagacity (Rezaeian, 2009); hence, it can be said that in not very far past the competitive power and advantage of an organization or community were assessed by virtue of more material forces availability . In previous centuries an advanced organization was one with more access to raw materials, underground sources, primary materials, cheap human force, land, etc. as production factors in classic economy. Now the conditions have changed generally in competition field . Science is considered as one of the most important production factors and mentioned as the most important advantage of the organizations' competition (Sohrabi *et al.*, 2011) . For the first time in 1876 George Eliot, the English journalist wrote the article, ' Science, the capital of next generation's power' whose correctness became clear for everybody after one century (Sardari, 2009) .

One of the strategic steps of science management process is to share science out. In fact, the organizations should control and manage properly the type of the science concerning their processes , consider science as an important source to create and keep the competitive advantage in the organization and specially pay attention to share science out resulted to improve the governmental organizations' processes operation in the competitive atmosphere (Han and Vittal, 2007). The role of sharing science out to manage the governmental organizations are so important that some writers state, 'The science management is to support to share science out'. One of the reasons indicating the importance of sharing science out is because it leads to improve the operation (Rahnavard and Khavandkar, 2008), serve the clients, decrease the expenses, new services and products development in shorter time and decrease the delay concerning services and goods delivery to the clients and finally decrease the ex-

Corresponding author: Ahmad Ali Yazdanpanah, High Education and Program Institute, Faculty of Statistic Researches and Information Technology, Iran. Email: aayazdanpnah@gmail.com.

penses concerning accessibility to precious sciences in the organization (Sohrabi *et al.*, 2010) .

The experience indicated that the science management discussion has found its position in the private sector and is not a temporary mode (Cong and Pandya, 2003) but it seems that the science management discussion has not found its position in the private sector yet. (Salavati, 2010); hence, OCDE (Economic Cooperation and Development Organization) considers necessary for several reasons to go towards managing science and its processes for governmental organizations including globalization, policy creation, minify and change from superintending to authority role , reducing the distance between private and governmental sectors , increasing people's science and finally science potentials out of the governmental sector (Mohammadi, 2009) .

This article is to examine how to share science out as a system in governmental sector. First the science management , sharing it out and the factors effective of the sharing are examined and then the factors effective on sharing science out in governmental sector issued to realize the scientific frame of the study .

The Literature Review

Knowledge management

The most prominent characteristic of the intelligent organizations of 21st centry is their emphasis on science and information. The data are transferred and the information are shared out, but science is a type of people's and communities' characteristic which may not be transferred easily. There are two great assets in the organizations: the personnel and their science. Therefore, such science should be created, saved, shared out and applied by the science management (Mohammadi, Fateh *et al.*, 2008) and the management may be defined as a method to improve the operation, benefiting, competitiveness, improve the sufficient achievement, share information out and use them in the organization, as a device to improve the decision and as a way to achieve the best methods and decrease the expenses and make the organization more innovative (Monavarian *et al.,* 2007) .

Until now different views have been proposed regarding the science management process including the Wiig's, Meyer and Zack's, Bukowits and Williams', Birkin Shaw's and Sheehan's (Ghelichli, 2009); one of the most complete ones is the process presented by King (Figure 1)

This process helps us consider better the achievement process, creation purification, save and use the science in order to achieve a better organizational operation (SaediandYazdani, 2009). The sharing science out has the strategic role in the process to improve the organizational science operation (Sohrabi *et al.*, 2011) which is discussed later .

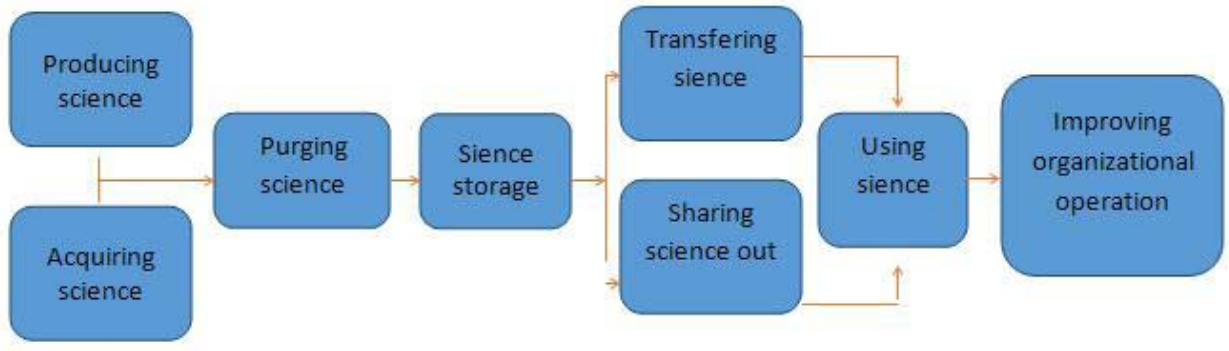

Figure 1. King's Science Management Process (Source : Brent and Vittal, 2007).

Knowledge Sharing management

Knowledge Sharing means to transfer the science to the colleagues in the internal or external relations process of the organization and science is what someone achieve in the organization (Ji *et al,* 2009). Bartol defines the sharing science out very well , "Sharing science out is to share the proper information , ideas , propositions and specialties with others in an organization ". Also sharing science out is a set of behaviours necessitating information

exchange or aiding others (Manian *et al.*, 2010). The studies done about sharing science out indicate its complexities and several dimensions influencing of the phenomenon (Azarbayjani, 2007). Several studies have been done regarding the factors influencing sharing science out in the organizations and communities in order to facilitate this important part of science management and we mention the most important ones in this section.

The factors influencing knowledge sharing management

Gruber and Duxbury studied deeply in research and development department of a superior technology company and having examined the relation between organizational culture and sharing science out they concluded that the reward and open relation systems are the most important in the field (Gruber and Duxbury, 2001) .

Sveiby's and Simons' study done in both private and governmental organizations shows that the cooperation atmosphere is one of the effective factors on the science management's activities effectiveness (Sveiby and Simons, 2002). Hsu's *et al.* (2007) findings concerning a study about the behaviours led to share science out in figurative communities emphasize the effect of confidence and shared science effectiveness indexes (Hsu *et al.*, 2007) . Lin examined the factors effective on sharing science out in advanced technologic companies in Taiwan and stated that the concentration and complexity of organizational structure have negative effect and motivation and reward systems have positive effect on sharing science out in such organizations (Lin, 2007). Also Kim and Ju studied the factors effective on sharing science out between the members of scientific board in some colleges in South Korea and concluded that the understanding factors and rewarding systems are the most important (Kim and Ju, 2008).

Another study done by Yu, Lu, and Liu about weblogs concerning the factors effective on sharing science out indicates that relations openness , satisfaction due to helping others , sharing culture and the profit of sharing science have strong relation with the behaviour led to share the users' science (Yu, Lu, and Liu, 2009). Also Willem and Buelens examined the effect of different dimensions of organizational structure on science dimensions and concluded that the most important factor in this relation is the harmonization factor (Willem and Buelens, 2009). Huang examined the science sharing between the members of research and development teams too and confirmed the role of confidence in sharing science out and stated that the science sharing has positive effect on the teams' operation (Huang, 2009) .

Lin, Hung, and Chen examined the factors defining the science sharing in figurative communities and showed that the effectiveness of the shared science , the relative superiority gained from such science and adaptation of such science with the people's values , learnings and experiences have the most effects in sharing science out in such communities (Lin, Hung, and Chen, 2009) .

In addition to the mentioned studies other researches have been done in this field and a summary of them is shown according to their dates in table 1.

The factors and theories to knowledge Sharing management

The studies done about sharing science out focus on three factors : enablers , process and organizational operation , but these factors are usually examined separately in the studies . Enablers are the factors in relation to how the organizational mechanisms may enhance in a method .Therefore, this leads to create and share science out . The science management process or activities include the creation , management , save and apply science and organizational operation is considered as the result of the organization in relation to the commercial goals (Yusof *et al*, 2012); in other words , the science management emphasizes on the people in order to create the spirit to share and benefit from science . Also the processes and methods are focused to find, create, gain and share science out and technology is focused to save and apply science (Noruzian, 2005); in this relation some researchers focus on the factors effective on sharing science out and some others study about the relation between sharing science and organizational operation.

Recently many theories such as social exchange theory, social knowledge theory, political power theory, economic exchange theory, operation expense theory, programmed behaviour theory and social performance theory have been used by the researchers in order to predict the factors effective on the behaviour sharing science out; for example , the economic exchange theory was examined to test the role of material rewards in encouraging the process to share science out in the organizations. Also the social exchange theory and logic performance theory were examined to examine the factors effective on sharing science out in an organization. On the other hand,

programmed behaviour theory was examined to assess the factors encouraging the tendency towards sharing science out and its execution by the superior managers and the logic performance theory was presented as the notional frame creating an integrated understanding from the factors supporting and preventing the will and tendency towards sharing science out .

However, such theories are limited because they may examine only one factor in an organization; for example, logic performance theory and programmed behaviour theory are used to examine the organizations' staff while social exchange theory and social capital theory focus on organizational factors (Yusof *et al,* 2012) .

Table 1. The studies done in relation to the factors effective on sharing science out in different communities and organizations.

Researcher	The examined factors	The examined organization	Study year
Gruber and Duxbury	Superior managers' confidence, openness and support, organization reward system	Study and development dept. of a superior technology company	2001
Sveiby and Simons	Organizational culture	Private and governmental organizations	2001
Hsu et al.	Effectiveness and confidence in the shared science	Figurative communities	2006
Han and Anantatmula	Applicable technology and its availability, management support with motivational structures of the organization and competition	IT organizations in USA	2007
Lin	Motivational and rewarding systems, organizational structure	Taiwan Advanced Technologies Companies	2007
Lin	Individual: effectiveness of shared science andsatisfaction due to helping others	50 great advanced technology companies in Taiwan	2008
Kim andJu	Understanding factor, confidence, honesty, relations openness, sharing and cooperation and relation channels based on IT and relations	Members of scientific boards of colleges , South Korea	2004 - 2008
Yu et al.	Open relations , satisfaction due to helping others, sharing culture and sharing science profit	Weblogs	2008
Willem and Buelens	Different dimensions of organizational structure (Harmonization, focus, formality and specialty)	Two organizations in Belgium	2008
Yong	Superior managers' and organization support, staff's tendency to share science	International hotels in Taiwan	2009
Lin, Hung, and Chen	Confidence, effectiveness of shared science, relative advantage gained by the science and adapting it with people's values, learning and experiences	Figurative communities	2009
Hung	Confidence	60 research and development teams	2009

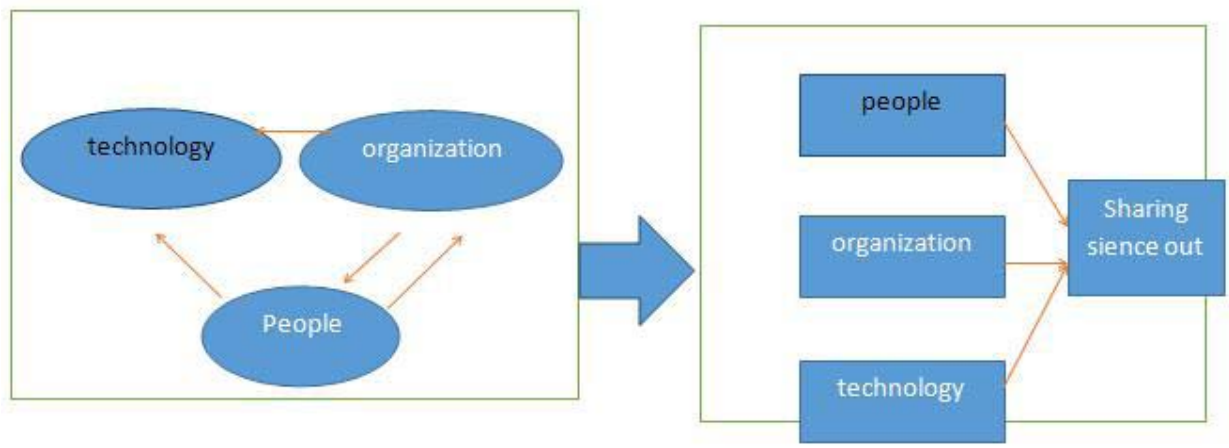

Figure 2. The elements related to share sciencein governmental sector according to Lin (Yusof et al, 2012).

Table 2. The factors effective on knowledge sharing in governmental sector with related researchers.

Factor	Variable	Related researchers
Individual	Knowledge	Lin (2007); Lee and Al-Hawamdeh (2002); Daneshgar (2001); Cong and Pandya (2003); Van den Brink (2003); Zakaria (2005).
	Confidence	Lin (2007); Mooradian, Renzl and Matzler (2006); Van den Brink (2003);
		Davenport and Prusak (2000); Disterer (2001); Riege (2005); Connelly (2000); Levin et al. (2002); Roberts (2000); Kim and Lee (2004).;
	Personality	Lee and Al-Hawamdeh (2002); Awad and Ghaziri (2004); Mooradian, Renzl and Matzler (2006); Engstrom (2003).
	Occupational satisfaction	Engstrom (2003).
Organizational	Organizational culture	Rubenstein-Montano et al. (2001); Jarrar (2002); Van den Brink (2003), DeTienne et al. (2004); Thomas (2005); Davenport and Prusak (2000); Cong and Pandya (2003), Stoddart (2001); Disterer (2001); Syed Omar and Rowland (2004).
	Organizational structure	Van den Brink (2003); DeLong and Fahey (2000); Nonaka and Takeuchi (2005); Probst, Raub and Romhardt (2000); Zhou and Fink (2003); Thomas (2005); Zakaria (2005); Disterer (2001) Riege (2007); Cong and Pandya (2003); Sharratt and Usoro (2003); Syed Omar and Rowland (2004).
	Reward and knowledge	Al-Hawamdeh (2003); Lee and Al-Hawamdeh (2002); Bryant Bock et al. (2005).
	Work process	Davenport and Prusak (2000); Andersson (2000); Larsson and Ohlin (2002); Chaudhry (2005); Norizah et al. (2005); Lee and Al-Hawamdeh (2002); Van den Brink (2003).
	Administrative layout	Davenport and Prusak (2000); Lee and Al-Hawamdeh (2002); Arora (2002).
Technology (Technical)		
	Software technology	Smith (2001); Syed Omar and Rowland (2004).
	Fundamental technology	Beckman (1999); Binz-Scharf (2003); Van den Brink (2003) ; Hasanali (2002); Syed Omar and Rowland (2004).
	Technology based on computer science	Hasanali (2002); Syed Omar and Rowland (2004).

Here we focus on the Lin's study (2008) and summarize their interrelations as it is shown in Figure 2.

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However, such theories are limited because they may examine only one factor in an organization; for example, logic performance theory and programmed behaviour theory are used to examine the organizations' staff while social exchange theory and social capital theory focus on organizational factors (Yusof *et al*, 2012) .

The factors effective on knowledge Sharing management in governmental sector :

The factors effective on knowledge Sharing in governmental sector with related researchers are mentioned in table 2.

System

Generally a system is a set of elements with interrelations with defined specifications and the elements with their environment create a general complex (Rezaeian, 2009). With a static glance the elements of each system are the same sections forming the system while with a functional glance the sections doing essential duties of the system are its elements; thus, the elements of a system includes the inputs , process home and outputs (Rezaeian, 2009); Checkland has named the set of these elements together as essential pattern of the systems and is mentioned as a simple mechanism to understand the system function (Jessapand Velasich, 2013; 264) .

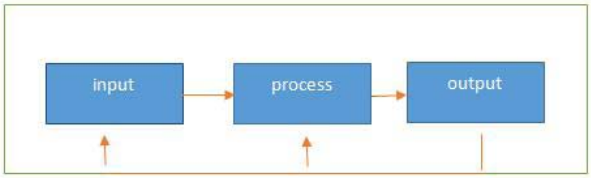

Figure 3. General diagram of a system.

In this article the variables of systems' essential pattern are as follows:

Input: The factors effective on sharing science in governmental sector.

Process: Sharing science.

Output: The organizational services and operation.

This model shows that the sharing science may make the organization more beneficiary and competitive. Science is an essential factor for organizations in line with deciding on time, improving quality, effectiveness, efficiency, better integration and cooperation with the departments of an organization.

Therefore, the science sharing culture should be developed in the organizations and this was weaker in the governmental organizations than the private ones Therefore, it is more sensible in the former and the proposed model is in the same direction, too.

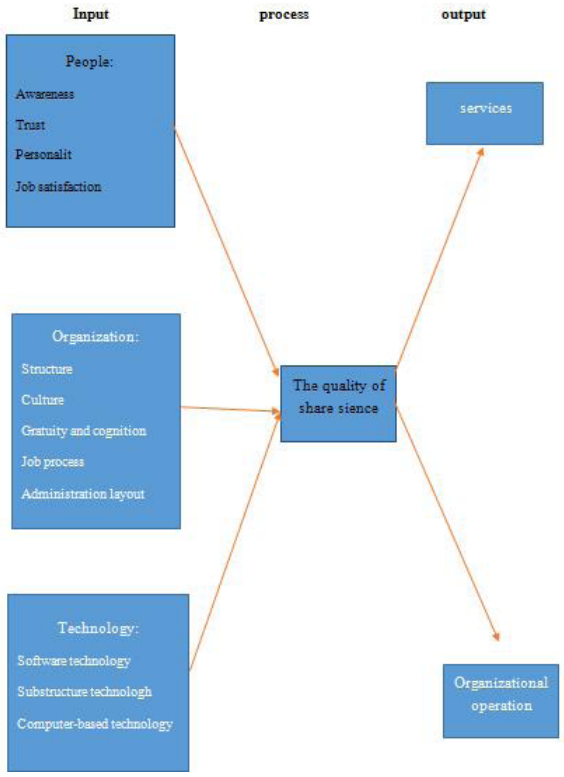

Figure 4. Scientific frame for research (The system architecture of knowledge Sharingin governmental sector).

Conclusion

The critical importance of science as a source to renovate the organization strategy is clear in present complicated and changeable world. Science enables the organizations to gain and apply knowledge more rapidly and effectively than past Therefore, it creates a basis to keep the stable competitive advantage .Present ear is the era of the wonderful changes and evolutions in technology and thought structure is full of deepening the information and paying attention to cooperate creative human force in line with science instead of functional human force; hence, intelligent management is to apply science as much as possible and better in line with applying a device named science to encounter with and prevent distrust, keep the position, creation and innovation to develop competitive field. The governmental organizations need the mechanisms enable them to improve the sharing science in order to access such advantage and help them to access better situation.

On this basis, first knowledge management, knowledge Sharingand studies done about the factors effective on knowledge Sharing in communities and organizations were mentioned in this article. Then having reviewed related literature the factors effective on sharing science became known in governmental sector ;in this article these factors were grouped into three items: individual, organizational and technical In final model of the study important elements in science management frame in governmental sector (Personnel, organization,technology) effective on sharing science are considered as the inputs,the science management operation as process and finally the organizational operation and services improvement as output.

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